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(19)

(54) IMPROVEMENTS IN OR RELATING TO SADDLE-TREES

(71) I, ERNST GOEDICKE of German Nationality of 3030 Walsrode am Tierhof No. 6, Germany (formerly of 336 Osterrode, (Harz), Schlesische Strasse 48, Germany) do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a saddle-tree incorporating plastics material, to serve as a frame for a riding saddle and is related to the invention disclosed and claimed in my Patent No. 1 245 445.

Conventional saddle-trees using a number of different materials such a ply-wood or wood frame with belts extending between the frame and an inner, partial leather covering are very expensive to produce as a result of the individual working operations required and the high degree of craftsmanship called for. It has been proposed to form saddle-trees at least predominantly of polyester plastics material in a multi-layer construction which are light in weight and save some of the complex working operations of conventional wooden saddle-trees. However, such previous constructions have tended to be inflexible and liable to break when a horse falls or even rolls on its back.

According to one aspect of the present invention there is provided a saddle-tree moulded of rigid expanded plastics material having a waist and seat and including a layer of reinforcing material within the plastics material and extending substantially wholly across the saddle-tree at least in the region of the waist.

Conveniently, the layer has means to key it to the rigid expanded plastics material.

Preferably, the reinforcing material is sheet polyethylene and the plastics material is foamed polyurethane.

According to another aspect of the present invention there is provided a method of manufacturing a saddle-tree comprising forming a flat sheet of thermoplastic reinforcing material to the desired contour; positioning the sheet in a mould in a manner to cause the sheet to bend roughly into the curvature of the saddle tree; introducing into the mould a self reacting mixture constituting a polymerisable plastics material; allowing the mixture to polymerise and expand to the shape of the mould and around at least the major part of the sheet thereby producing sufficient heat to soften the sheet and deform it permanently to the curvature of the saddle-tree.

One embodiment of a saddle-tree, having a round cantle and forward points, according to the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a saddle-tree, according to the invention;

Fig. 2 is a front end view of the saddle-tree shown in Fig. 1;

Fig. 3 is a plan of the saddle-tree shown in Figs. 1 and 2;

Fig. 4 is a longitudinal section of the saddle-tree taken along the line 4-4 of Fig. 3;

Fig. 5 is a view similar to Fig. 1 showing a saddle tree according to the invention fitted with a front iron and crash springs; and

Fig. 6 is an underplan view of the saddle tree of Fig. 5.

Referring now to the drawings, a saddle-tree comprises a seat portion 1, with a round cantle, extending into a waist portion 2 and two forward points 3, to which the front iron 10 and crash springs 11 of the saddle are fitted.

The seat portion 1 and the waist portion 2 of the saddle-tree are moulded from rigid expanded polyurethane, the seat portion 1 having a slightly concave seat surface 4 which is developed rearwards to form a

raised edge or rump-piece 5. Extending within the polyurethane is a layer 6 of thermoplastic material e.g. hard polyethylene, which serves as a reinforcement for the seat portion 1 and the waist portion 2 and which also forms the forward points 3. This layer 6 is provided in its region extending into the seat portion and the waist portion with a plurality of spaced holes 7 forming keys for the polyurethane during the moulding process. Thus, the polyurethane covers almost the whole surface of the saddle-tree and provides the desired outer shape, but the outer portions of the forward points 3 should be free of polyurethane in order to enable a proper fastening of the front iron 10.

As can be seen in Fig. 5 and 6, the front iron 10 is secured to the underside of the reinforcing layer 6 by rivets 12 passing through holes 8 provided for this purpose. Ten rivets 12 (five on each side of the central longitudinal axis) are shown although eight would be sufficient. Two crash springs 11 are provided one on each side of the tree and are each attached by a separate pair of the rivets 12 and by a separate connecting plate 13. The connecting plates 13 are secured to the front iron 10 at one end by a separate one of the rivets 12 and are secured at the other end to the associated crash spring 11 by a rivet 14 which passes through a hole 9 in the reinforcing layer 6 and the polyurethane covering.

The method of moulding the saddle-tree according to the invention is as follows:

A flat sheet of hard polyethylene approximately 6 to 7 mm. thick is cut or punched with the desired peripheral shape and a plurality of spaced holes 7 is drilled or punched into it to form the keying means. The flat sheet is then positioned in a mould (not shown), the cavity of which represents the finished outer shape of the saddle-tree to be moulded. Within the mould the sheet is bent to its required shape and held in this position by suitable mechanical means. A plastics material incorporating expandable polyurethane in liquid form is poured into the mould to flow around the major part of the flat sheet covering substantially the whole of its surface except its forward points 3. The material preferably should be self reacting to expand by foaming and set by polymerisation. The polymerisation produces sufficient heat to soften and permanently deform the sheet of polyethylene. The formed saddle tree is removed from the mould after cooling for finishing.

Thereafter the front iron 10 and the crash springs are fastened directly to the formed saddle tree, the front iron 10 being on the underside of the saddle-tree and the crash springs 11 being on both sides of the saddle tree and in the corner between the forward points 3 and the beginning of the waist portion 2.

For this purpose, the holes 8 and 9 are drilled in the front region of the saddle tree. The holes 8 receive the rivets 12 to secure the front iron 10 to the saddle tree and also the forward ends of the crash springs 11 and the forward ends of the connecting plates 13 respectively. The other ends of the connecting plates 13 and the rearward ends of the crash springs 11 are riveted by the rivets 14 to the reinforcing sheet 6 at the beginning of the waist portion 2. The rearward end of each crash spring 11 is therefore effectively directly fixed to the front iron 10 by the associated connecting plate 13. This prevents undue stresses being exerted on the reinforcing sheet 6 in the region of the holes 9.

It has been found that by this construction any force acting on the crash springs or the front iron is properly transmitted into the reinforcement sheet and through this sheet into the saddle. Moreover, in view of the fact that the reinforcement sheet in the saddle-tree has some curvature and is made of a material having sufficient elastic properties, also the waist portion of the saddle-tree is of high strength but is not "brittle" so that there is a decrease in the tendency of breaking upon the application of unusual forces, say when the horse falls or even when it rolls over on its back and the saddle. Intimate connection between the reinforcement sheet and the foamed polyurethane contributes to these desirable properties, i.e. good strength and sufficient elasticity. Moreover, the polyurethane avoids the necessity of padding up the saddle-tree to its final form, because it provides the final shape itself. Thus, it is only necessary to put the final leather finish on the saddle-tree, but it is desirable additionally to use a foamed rubber cushion on the seat portion and the waist portion. It will be understood that, in known saddle-trees, substantial padding work is normally done by attaching belts or the like to the wooden frame and applying upholstery and internal leather covering or the like to arrive at the result which the present invention produces directly from the mould. The leather finish can be attached as for a known wooden saddle-tree, e.g. by nailing, sewing or the like.

It will be understood that various modifications may be made to the saddle tree according to the invention. Different keying means may be employed for the reinforcing layer and the latter may be formed to different shapes to provide differently shaped saddle-trees. The reinforcing layer could for example be split longitudinally to facilitate bending prior to the moulding operation.

By using hard polyethylene for the layer and expanded polyurethane for the remainder of the saddle-tree conventional means may be employed to pad and cover the saddle-tree to form a finished saddle. Such means may include nailing, sewing, riveting or the like.

WHAT I CLAIM IS:—

1. A saddle-tree moulded of rigid expanded plastics material having a waist and seat and including a layer of reinforcing material within the plastics material and extending substantially wholly across the saddle-tree at least in the region of the waist.

2. A saddle tree according to claim 1 in which the layer has means to key it to the rigid expanded plastics material.

3. A saddle tree according to claim 1 or claim 2 in which the reinforcing material is sheet polyethylene and the plastics material is foamed polyurethane.

4. A method of manufacuring a saddle-tree comprising forming a flat sheet of thermoplastic reinforcing material to the desired contour; positioning the sheet in a mould in a manner to cause the sheet to bend roughly into the curvature of the saddle tree; introducing into the mould a self reacting mixture constituting a polymerisable plastics material; allowing the mixture to polymerise and expand to the shape of the mould and around at least the major part of the sheet thereby producing sufficient heat to soften the sheet and deform it permanently to the curvature of the saddle-tree.

5. A method of manufacturing a saddle tree substantially as herein described.

6. A saddle-tree substantially as herein described with reference to figs 1-6 of the accompanying drawings.

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1384062 COMPLETE SPECIFICATION
2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

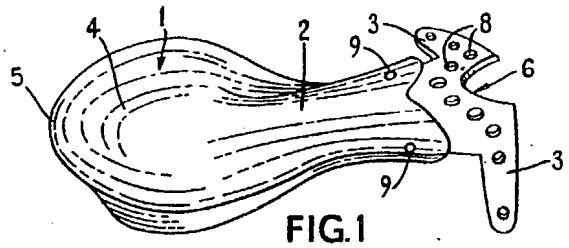

FIG.1

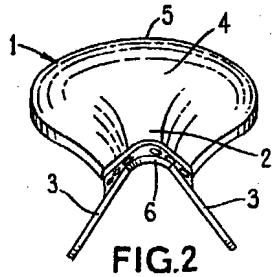

FIG.2

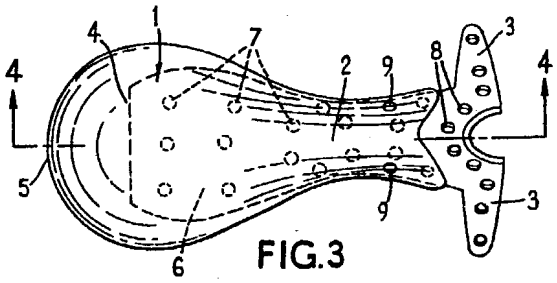

FIG.3

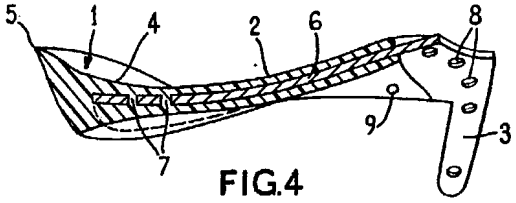

FIG.4

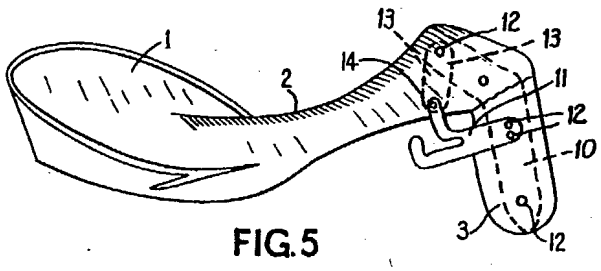

FIG.5

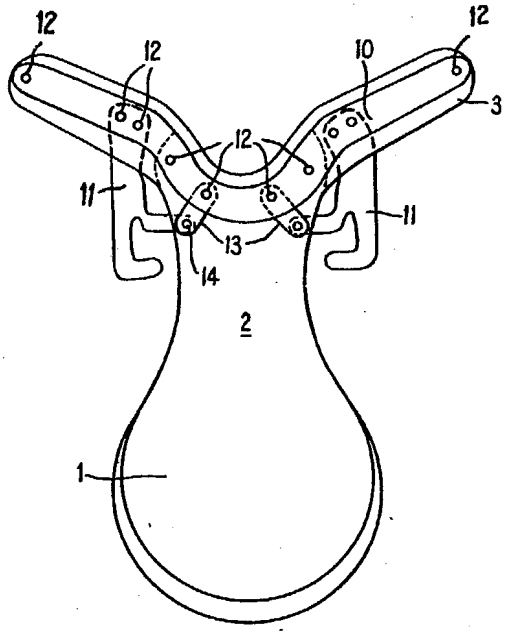

FIG.6